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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,269	09/11/2003	Emi Takuma	0675.0559	3525

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EXAMINER

MARTIR, LILYBETT

ART UNIT PAPER NUMBER

2855

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/659,269

Applicant(s)

TAKUMA, EMI

Examiner

Lilybett Martir

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1,3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable Zabler et al. (Pat. 5,930,905) in view of Niki et al. (Pat. 6,404,084).

- With respect to claim 1, Zabler et al. teaches magnets 20 and 21 rotating in synchronization with a steering shaft L mounted on a vehicle; and a magnetic sensors 22 and 23 mounted adjacent the respective magnets, the magnetic sensors configured to detect a rotation angle of the steering shaft by sensing a change of a magnetic field emitted from the magnets (Col. 5, lines 24-33), wherein each magnet has S and N poles arranged on a plane of which normal line is in a substantially axial direction of the steering shaft as noted in Figure 1; and the magnetic sensors 22 and 23 being disposed such that a sensing direction thereof is set to be a substantially single direction coinciding with the axial direction of the steering shaft L (note the direction of movement of  $\theta$ ,  $\Psi$  and  $\phi$ , all being in the same rotational direction) Zabler et al. fails to teach the utilization of magnets that rotate at different speeds. ). Niki et al. teaches that the utilization of different gears 15,17 and 18 as the ones shown

in Figure 1 for the transmission of rotational movement is commonly known in the art. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the angular measurement device of Zabler et al. utilizing the teachings of the rotation sensor arrangement of Niki et al. by modifying the size of the gears so that one rotates faster than the other in order to modify the rate of transmission of torque between the rotating disc to further make said device versatile, reliable and efficient.

- With respect to claim 3, Zabler et al. teaches the magnetic sensors 22 and 23 being provided on a position where a component of the magnetic field from the magnet in the axial direction of the steering shaft is detectable (Col. 5, lines 36-43).
- With respect to claim 5, Zabler et al. teaches the utilization of a Hall sensor (Col. 5, lines 44-45). Zabler et al. fails to specifically teach the magnetic sensor is a hall IC formed of a plurality of hall elements. Niki et al. teaches the utilization of Hall IC elements H1 and H2 to measure rotation (Col. 4, lines 21-24). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the rotary position sensor of Wan et al. utilizing the teachings of the rotation sensor arrangement of Niki et al. by substituting his Hall sensor and utilizing a more accurate detector such as a Hall IC to further improve the accuracy of the device and therefore it's reliability.

3. Claims 2-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zabler et al. (Pat. 5,930,905) in view of Wan et al. (Pat. 6,707,293) and further in view of Niki et al. (Pat. 6,404,084).

- With respect to claim 2, Zabler teaches a first gear 11 rotating in synchronization with a steering shaft L mounted on a vehicle; a second gear 12 rotating in synchronization with the first gear at a speed faster than a speed of the first gear; a third gear 13 rotating in synchronization with the first gear; magnets 20 and 21 rotating in synchronization with the second and third gears, respectively; magnetic sensors 22 and 23 provided in vicinities of the magnets of the second and third gears as noted in Figure 2b, respectively, the magnetic sensors configured to sense changes of magnetic fields from the magnets of the second and third gears (Col. 5, lines 23-42); and a computation unit 24 configured to compute a rotation angle of the steering shaft by detecting rotation angles of the second and third gears based on sensing signals from the magnetic sensors (Col. 5, lines 39-42), wherein each of the magnets 20 and 21 provided on the second and third gears has S and N poles arranged on a plane (Col. 5, lines 27-30) and each of the magnetic sensors 22 and 23 are disposed such that a sensing direction thereof is set to be a substantially single direction and the sensing direction is made to substantially coincide with the axial direction of the steering shaft L as

noted in Figure 2b. Zabler et al. fails to teach the third gear rotating at a speed slower than a speed of the second gear and each of the magnets provided on the second and third gears and the magnet having S and N poles arranged on a plane of which normal is in a substantially axial direction of the steering shaft. Wan et al. teaches a magnet 106 rotating in synchronization with a steering shaft 108 (Col. 2, lines 49-51) mounted on a vehicle; and a magnetic sensor 102 mounted on a side, the magnetic sensor configured to detect a rotation angle of the steering shaft by sensing a change of a magnetic field emitted from the magnet, wherein the magnet has S and N poles arranged on a plane of which normal line is in a substantially axial direction of the steering shaft as noted in Figure 1; and the magnetic sensor 102 is disposed such that a sensing direction thereof is set to be a substantially single direction and the sensing direction is made to substantially coincide with the axial direction of the steering shaft (Col.2, lines 52-64). Niki et al. teaches that the utilization of different gears 15, 17 and 18 as the ones shown in Figure 1 for the transmission of rotational movement is commonly known in the art. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the angular measurement device of Zabler et al. utilizing the teachings of both the rotary position sensor of Wan et al. and the rotation sensor arrangement of Niki et al. by rearranging the magnet so that it has S and N poles

arranged on a plane of which normal line is in a substantially axial direction of the steering shaft and modifying the size of the gear so that the second one is bigger than the third one in order to modify the rate of transmission of torque between the rotating disc to further make said device versatile, reliable and efficient.

- With respect to claim 4, Zabler teaches the magnetic sensors 22 and 23 being provided on positions where components of the magnetic fields from the magnets in the axial direction of the steering shaft are detectable as noted in Figure 2b (Col. 5, lines 24-43).
- With respect to claim 6, Zabler teaches the utilization of a Hall sensor as expected (Col. 5, lines 44-46). Zabler fails to specifically teach the magnetic sensor is a hall IC formed of a plurality of hall elements. Niki et al. teaches the utilization of Hall IC elements H1 and H2 to measure rotation (Col. 4, lines 21-24). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the angular measurement device of Zabler et al. utilizing the teachings of both the rotary position sensor of Wan et al. and the rotation sensor arrangement of Niki et al. by utilizing a more accurate detector such as a Hall IC to further improve the accuracy of the device and therefore it's reliability.

### ***Response to Arguments***

4. In response to applicant's argument that "sensing rotational speed of a drive shaft for power windows or sun roofs is in no way analogous to the issue of measuring the degree of rotation of a steering wheel" is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, rotational and angular measurements are analogous, since have both very similar working mechanisms that are in fact classified in the same art.

5. Applicants amendments raised new issues that made necessary the new art to be applied and therefore, the arguments presented against Wan et al. are said to be moot due to the new grounds of rejection. Applicant's arguments have been addressed in the above presented office action.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

7. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilybett Martir whose telephone number is (571)272-2182. The examiner can normally be reached on 9:00 AM to 5:30 PM.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Noori can be reached on (571)272-2185. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LM

Lilybett Martir  
Examiner  
Art Unit 2855

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**MAX NOORI**  
**PRIMARY EXAMINER**